REMARKS

Applicants respectfully request entry of this Preliminary Amendment.

The application has been amended to insert the required reference to the parent applications, for which benefit is claimed, of this new continuing application.

Applicants have also amended Table 1 to include sequence identifiers, and to replace L (leucine) residue number 234 of SEQ ID NO: 1 (WT*) with I (isoleucine). Support for this replacement is found in the sequence listing as filed (SEQ ID NO: 1), and no new matter enters by amendment.

The abstract has been amended to replace a two paragraph abstract with a one paragraph abstract, as requested during the prosecution of the parent application. (Page 4, Office Action dated September 10, 2002.)

Applicants submit a formal version of Figure 1, as requested during the prosecution of the parent application. (Page 3, Office Action dated September 10, 2002.)

Applicants cancel claims 1-9, and add new claims 10-18. Support for new claims 10-18 can be found throughout the application as filed, and no new matter enters by amendment. Specific support can be found as follows:

Claim	Support
10	Original claim 1; table 1
11	Original claim 1; table 1 - (90% is arrived at by dividing the number of mutations in table 1 by the total number of amino acids in kanamycin nucleotidyltransferase protein.)
12	Original claim 1; table 1
13	Original claim 1; table 2
14	Example 4; Figure 2
15	Table 2

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Claim	Support
16	Example 3
17	Original claim 2; example 3; table 2
18	Original claim 1

Rejections under 35 U.S.C. § 112, First Paragraph, Written Description

Original claim 1 reads as follows:

1. A mutant kanamycin nucleotidyltransferase having one or more point mutations selected from a group consisting of Met57Leu, Ala62Val, Ser94Pro, Ser203Pro, Asp206Val, His207Gln, Ser220Pro, Ile234Val, and Thr238Ala as against the protein comprising the amino acid sequence indicated by SEQ ID NO:1, and having improved thermostability.

In the parent application, the Office rejected claim 1 under 35 U.S.C. § 112, written description, alleging that the claim read on any kanamycin nucleotidyltransferase of any structure. Further, the Office alleged that one of ordinary skill in the art would be unable to predict the structure of members of the genus from the instant disclosure (Item 9, Office Action, April 4, 2003.)

Although Applicants do not agree with these allegations, Applicants have entered new claims in this continuation intended to address these concerns. New claim 10 recites specific positions in the kanamycin nucleotidyltransferase sequence at which mutation is permissible. New claim 11 requires at least 90% sequence identity to SEQ ID NO:1, while new claims 12 and 13 recite specific numbers of allowable point mutations as compared to reference sequences SEQ ID NO:1 and SEQ ID NO:2, respectively. All of these claims precisely define the metes and bounds of the claimed genus, and permit one of ordinary skill in the art to readily determine whether or not a mutant kanamycin nucleotidyltransferase sequence is within the claimed genus.

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Applicants further submit that dependent claims 14 and 15 add further defined limitations, while independent claim 17 is similar in wording to allowed claim 10 in the parent application, but instead uses SEQ ID NO:2 as the reference sequence.

Rejections under 35 U.S.C. § 112, First Paragraph, Enablement

In the parent application, the Office also rejected claim 1 under 35 U.S.C. § 112, first paragraph, scope of enablement, arguing that one of skill in the art would be unable to make all of the members of the genus without undue experimentation. In particular, the Office cited a "lack of predictability or direction" in producing the members of the claimed genus, contending that the specification "presents no guidance or working examples of the production of KNTs that have such low sequence identity with respect to SEQ ID NO:1." (Item 10, Office Action, April 4, 2003.)

Applicants submit that new claims 10-18 are enabled, and that the specification includes abundant working examples. For example, the specific positions of allowable mutations listed in claim 10 are supported by a host of working examples, including SEQ ID NO:2 (positions 2, 61, 66, 75, 91, 102, 112, 116, 199, and 211), SEQ ID NO:3 (positions 2, 61, 66, 75, 91, 102, 112, 116, 199, 211, and 238); SEQ ID NO:12 (positions 17, 75, 91, 102, 112, 116, and 196); SEQ ID NO:13 (positions 25, 57, 61, 62, 75, 94, 102, 117, 190, and 211); SEQ ID NO:14 (positions 61, 66, 75, 91, 102, 199, and 246); SEQ ID NO:15 (positions 2, 61, 66, 75, 91, 102, 112, 116, 190, and 198; SEQ ID NO:16 (positions 62, 66, 75, 91, 102, 112, 159, 188, 197, and 199); SEQ ID NO:17

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(positions 61, 66, 75, 91, 102, 112, and 199); SEQ ID NO:18 (positions 61, 66, 75, 91, 102, 112, 116, and 199); SEQ ID NO:19 (positions 61, 66, 75, 91, 102, 112, and 199); and SEQ ID NO: 20 (66, 75, 91, 94, 102, 112, and 199). Similarly, the Application includes working examples of mutant kanamycin nucleotidyltransferases containing 1, 2, 4, 8, and 9 point mutations as compared to SEQ ID NO:2, and 9, 10, 11, 13, or 19 point mutations as compared to SEQ ID NO:1. Applicants also describe 29 different amino acid residues mutated in thermostable kanamycin nucleotidyltransferase proteins. Applicants thus submit that the specification provides ample information to enable one of ordinary skill in the art to make and use the invention as claimed.

Please grant any extensions of time required to enter this paper and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: November 24, 2003

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